AMENDMENTS

In the Claims

Please cancel claims 1 and 119 and amend the remaining claims as follows:

4. (Three Times Amended) The method of Claim 120, wherein said compound is selected from the group consisting of α-melanocyte stimulating hormone (α-MSH), a biologically active fragment of α-MSH, a homologue of α-MSH having α-MSH agonist activity, and a fusion protein comprising an α-MSH protein or a biologically active fragment thereof.

5. (Twice Amended) The method of Claim 120, wherein said compound is α-MSH.

7. (Once Amended) The method of Claim 120, wherein said compound is an analog of a peptide having the amino acid sequence of SEQ ID NO:2.

9. (Twice Amended) The method of Claim 120, wherein said compound is a peptide comprising the amino acid sequence of SEQ ID NO:1.

10. (Three Times Amended) The method of Claim 120, wherein said α-MSH compound has the following identifying characteristics: (1) an ability to bind to a melanocortin receptor that is expressed in peripheral tissues, and, (2) a biological activity selected from the group consisting of stimulation of lipolysis and inhibition of the uptake of fatty acids by adipocytes.

13. (Twice Amended) The method of Claim 120, wherein said compound binds to a melanocortin receptor expressed in the peripheral tissues with a higher affinity than to melanocortin-4 receptors (MC4-R).

16. (Once Amended) The method of Claim 120, wherein said compound does not bind to MC4-R under physiological conditions.

18. (Once Amended) The method of Claim 120, wherein said compound does not activate MC4-R under physiological conditions.

19. (Once Amended) The method of Claim 120, wherein said therapeutic composition is administered transdermally.

20. (Once Amended) The method of Claim 120, wherein said therapeutic composition is administered topically.

21. (Once Amended) The method of Claim 120, wherein said therapeutic composition is administered parenterally.

23. (Once Amended) The method of Claim 120, wherein said therapeutic composition is administered in a controlled release formulation.

24. (Once Amended) The method of Claim 120, whereby administration of said compound is insufficient to cause a statistically significant change in the appetite of said animal as compared to before administration of said compound.

25. (Twice Amended) The method of Claim 120, wherein said composition is administered in a dose of from about 0.1 μg to about 10 mg per kg body weight of said animal.

26. (Twice Amended) The method of Claim 120, wherein said compound is administered in a dose of from about 1 μg to about 10 mg per kg body weight of said animal.

27. (Twice Amended) The method of Claim 120, wherein said compound is administered in a dose of from about 40 μg to about 1 mg per kg body weight of said animal.

28. (Once Amended) The method of Claim 120, wherein said compound is from about 0.1% to about 90% of said therapeutic composition by weight.

29. (Twice Amended) The method of Claim 120, wherein said compound is from about 0.1% to about 1% of said therapeutic composition by weight.

31. (Twice Amended) The method of Claim 120, wherein said decrease in body weight in said animal can be measured within at least about one week of said step of administering said compound.

32. (Twice Amended) The method of Claim 120, wherein said animal has serum leptin levels between about 0 ng/ml and 50 ng/ml prior to said step of administration.

33. (Twice Amended) The method of Claim 120, wherein said animal has serum MSH levels between about 0 ng/ml and 10 ng/ml prior to said step of administration.

34. (Twice Amended) The method of Claim 120, wherein said animal has a ratio of serum MSH levels to serum leptin levels of greater than about 1:100 prior to said step of administration.

35. (Twice Amended) The method of Claim 120, wherein said animal is a human having a body mass index (BMI) of greater than 27 kilograms per square meter prior to administration of said compound.

36. (Twice Amended) The method of Claim 120, wherein said composition further comprises another body weight regulating agent.

39. (Three Times Amended) The method of Claim 37, wherein said composition comprises leptin in a dose of from about 0.1 μg to about 100 mg per kg body weight of said animal.

53. (Once Amended) The method of Claim 120, wherein said animal is a human.

54. (Once Amended) The method of Claim 120, wherein said composition further comprises an antagonist of MC4-R.

55. (Three Times Amended) The method of Claim 120, wherein said composition further comprises an agent that inhibits binding of said α-MSH compound to an MC4-R.

56. (Three Times Amended) The method of Claim 120, wherein said composition further comprises an agent which inhibits said α-MSH compound from entering the central nervous system of said animal.

59. (Three Times Amended) A method of decreasing the body weight or reducing the rate of weight gain in an animal, comprising administering to an animal a melanocyte stimulating hormone (MSH) compound selected from the group consisting of α-MSH and an α-MSH agonist in an amount effective to bind to melanocortin receptors expressed by said animal in said animal's peripheral tissues, said effective amount:

(a) being insufficient to measurably change the appetite of said animal after said step of administering as compared to before said step of administering;

(b) being between about 0.1 μg and about 10 mg per kg of body weight of said animal;

(c) being sufficient to affect a biological activity selected from the group consisting of:

(i) lipolysis; and

(ii) uptake of fatty acids by adipocytes in said animal; and

(d) being effective to measurably decrease the body weight or reduce the rate of weight gain of said animal after said compound has been administered to said animal.

98. (Twice Amended) The method of Claim 120, wherein said animal is at risk for or suffering from an obesity associated disorder.

102. (Twice Amended) The method of Claim 120, wherein said animal is at risk for or suffering from undesired body weight which is a side effect resulting from administration of a pharmaceutical compound.

117. (Twice Amended) The method of claim 120, wherein AA^5 is α,γ-diaminopropionic acid, α,γ-diaminobutyric acid, Orn, Lys, α,β-aminoadipic acid, α-aminopimelic acid, or higher homologs, Glu or Asp and AA^{11} is α,β-diaminopropionic acid, α,γ-diaminobutyric acid, Orn, Lys, α-aminoadipic acid, α-aminopimelic acid, Glu or Asp.

Please add new claim 120, which combines portions of former claims 1 and 119.

120. (New) A method to decrease the body weight or reduce the rate of weight gain in an animal, comprising administering to said animal a therapeutic composition comprising a melanocyte stimulating hormone (MSH) compound selected from the group consisting of α-MSH, α -MSH analog and a homologue of α-MSH having agonist activity;

wherein said therapeutic composition is administered to the periphery of said animal in an amount effective to measurably decrease body weight or reduce the rate of weight gain in said animal as compared to the decrease in body weight or reduction of the rate of weight gain in the

absence of administration of said compound; whereby administration of said compound minimizes delivery of said compound to the central nervous system of said animal;

wherein said α-MSH is a peptide comprising an amino acid sequence selected from the group consisting of: SEQ ID NO:1 and SEQ ID NO:2; and

wherein the α-MSH analog is selected from the group consisting of:

(a) Ac-[Cys^4, D-Phe^7, Cys^{10}] α-MSH, wherein said Cys residues are connected by a disulfide bond;

(b) Ac-[Nle^4, $X_{aa}{}^5$, His^6, $X_{aa}{}^7$, Arg^8, Trp^9, $X_{aa}{}^{10}$] NH_2, (SEQ ID NO:3)

wherein $X_{aa}{}^5$ is Glu or Asp, $X_{aa}{}^7$ is Phe or D-Phe and $X_{aa}{}^{10}$ is a dibasic amino acid, Lys, ornithine, 2,4-diaminobutyric acid, or 2,3 diaminopropionic acid (Dpr);

(c) Ac-[Cys^4, Cys^{10}]α-$MSH_{1\text{-}13}NH_2$;

(d) R_1-W-X-Y-Z-R_2,

wherein R_1 is selected from the group consisting of Ac-Gly-, Ac-Met-Glu-, Ac-Nle-Glu- and Ac-Tyr-Glu-;

W is selected from the group consisting of –His- and –D-His-;

X is selected from the group consisting of –Phe-, -D-Phe-, -Tyr, -D-Tyr-, (-pNO_2)D-Phe^7-;

Y is selected from the group consisting of –Arg- and –D-Arg-;

Z is selected from the group consisting of –Trp- and –D-Trp-; and

R_2 is selected from the group consisting of –NH_2, -Gly-NH_2, and –Gly-Lys-NH_2;

(e) Ac-Ser-Tyr-Ser-M-Glu-His-D-Phe-Arg-Trp-Gly-Lys-Pro-Val-NH_2 (SEQ ID NO:4);

wherein M is selected from the group consisting of Met, Nle, and Cys;

(f) [Nle^4, D-Phe^7]-α-MSH;

(g) [Nle^4, D-Phe^7] –α-$MSH_{4\text{-}10}$;

(h) [Nle^4, D-Phe^7] –α-$MSH_{4\text{-}11}$;

(i) [Nle^4, D-Phe^7,D-Trp^9] –α-$MSH_{4\text{-}11}$;

(j) [Nle^4, D-Phe^7] –α-$MSH_{4\text{-}9}$; and

(k) Ac-[Nle^4, AA^5, D-Phe^7, AA^{10}]-R_1 or Ac-[Nle^4, AA^5, D-Phe^7, AA^{11}]-R_2;

wherein AA^5 may be either a L- or D-amino acid having an omega amino or carboxyl group in the side chain;

wherein AA^{10} may be diaminopropionic acid, α,γ-diaminobutyric acid, Orn, Lys, α,β-aminoadipic acid, α-aminopimelic acid, or higher homologs, Glu or Asp;

wherein R_1 is the designation α-$MSH_{1-13}NH_2$, α-$MSH_{1-12}NH_2$, α-$MSH_{1-11}H_2$; α-$MSH_{4-13}NH_2$, or α-$MSH_{4-10}NH_2$;

wherein AA^{11} may be L- or D-amino acid having an omega amino or carboxyl group in the side chain;

wherein R_2 is the designation α-$MSH_{1-13}NH_2$, α-$MSH_{1-12}NH_2$, α-$MSH_{1-11}NH_2$, α-$MSH_{4-13}NH_2$, or α-$MSH_{4-10}NH_2$.